tion for the Advancement of Science. I have never been able to find a word. I therefore venture now to trouble you, in the hope that it will become more widely known, and be the means of showing that it is going on in different parts of the globe.

I must request that the slab sent with this may be returned. I would gladly give it to a public museum. It is the only good one I have; and I see no hope of ever going again to the printing house at Orkney to get more.

Wick, April 12, 1858.

BIBLIOGRAPHICAL NOTICES.

The Wonders of Geology. By Gideon Algernon Mantell, LL.D. &c. Seventh Edition, revised and augmented by T. R. Jones, F.G.S. London: H. G. Bohn. 1857–58.

This work forms one of the re-issues of Mr. Bohn's scientific series, and from the favourable reception it has met with, as indicated by the number of editions it has passed through, may fairly be considered as a useful introduction to the study of geology. The groundwork of these volumes was derived from a series of lectures given more than twenty years since by Dr. Mantell, at Brighton, in an attempt at the time to establish a county museum and scientific institution in that town. The basis of the museum was to have been the original geological collection, containing upwards of twenty thousand specimens, from which the subjects for the illustration of the lectures were selected. This collection, the result of the untiring labour of many years, both in the field and in the cabinet, was not destined to remain in the county of Sussex, from whence the larger and more valuable portion was derived, and the physical structure and ancient natural history of which it was intended to illustrate. As is well known, the Mantellian museum, containing many unique specimens, was transferred to the British Museum, where they are fully displayed amongst the other treasures contained in the Palæontological department of the national collection. Dr. Mantell may be said to have lived through some of the phases of geological science, and was no mean contributor to its onward progress, whether we regard the nature of his scientific writings, or the character of his popular teachings. As a lecturer, Dr. Mantell was probably unequalled: abounding in information, clear and lucid in style, gifted with a poetic temperament, he never failed to interest and instruct the audiences he frequently addressed. To him intellectual exertion was a relaxation rather than a fatigue: during the latter years of his life, and when in an impaired state of health, we have occasionally returned with him, after lecturing to some large assembly, and fully felt how his intellectual energies and poetic imagination have sustained him amidst much bodily suffering and mental anxiety.

The general nature of his lectures may be inferred from the work before us, and Dr. Mantell carefully revised every edition. The present or seventh edition is, however, considerably improved and augmented, and evinces much pains-taking and research,—the editor having spared no time or labour in working up the discoveries accumulated during the ten years that have elapsed since the previous publication, and which have been concisely but carefully incorporated in the present volumes. In fact, not only has much new matter been added, but many portions re-written and so far modified as to bring the work up to the present state of the science, and make it an exposition of the philosophy of geology. Copious notes are inserted, and numerous useful references given, so as to enable the reader to refer to any subject in a more detailed manner.

The original form of the work is retained—the division into eight lectures,—some of these, from their length, being again divided, and the subjects treated successively from the newer to the older deposits. The additional matter generally incorporated in each chapter contains all the more important and useful points of the science. In the Tertiary strata, the labours of Ed. Forbes and Prestwich as improving the classification of these rocks are fully given, more especially in the Isle of Wight district, and the foreign equivalents pointed out. Considerable improvements are effected in the part treating of the Cretaceous rocks, both as regards the fossils and the foreign range of these deposits. A concise account is given of the Foraminifera and Bryozoa, the editor giving his reasons for retaining the latter term instead of Polyzoa, used by some naturalists (p. 600). The importance of the Foraminifera in a geological point of view must not be underrated, independently of their remarkable forms and structure, as well as their endless varieties, which have exercised the skill and excited the admiration of collector and author. For much critical research on the numerous recent and fossil Microzoa we are indebted to the labours of Dr. Carpenter, Messrs. Williamson, Jones, and W. K. Parker.

The favourite subject of Dr. Mantell, the Wealden, is considerably improved, modified, and enlarged, the new facts connected with the Purbeck strata, arising from the researches of Ed. Forbes, Austen, and Fisher, being fully given. Much yet remains to be effected respecting the Wealden proper, both as regards the relative position of the strata composing it (we allude especially to the Asburnham beds) and also as to the physical geography of that period, whether fluviatile or estuarine, whether the result of the action of one river or many rivers and small streams emptying themselves into an adjacent estuary, and their general direction,—a subject upon which the researches of Mr. Fisher and Mr. Godwin-Austen have thrown considerable light. Nor should we forget the labours of Messrs. Beckles and Brodie, whose discoveries have added so much to the peculiar mammalian fauna of this period.

In relation to the history of the Wealden, with which the name of Dr. Mantell must always be intimately associated, we cannot, however, forbear to notice the researches of Dr. Fitton connected with

the early inquiry respecting the true relations of the Wealden strata, and which are not perhaps so fully known as they deserve. To Dr. Fitton we are not only indebted for the term "Hastings sands," but also for pointing out their geological and palæontological relations to the other beds. In 1822 these sands were described as "Iron sands" by Dr. Mantell (Fossils of the South Downs, p. 24), and considered in one place (p. 37) to be separated from the Weald clay by the Tilgate limestone; while in another this limestone was identified with the Purbeck (p. 299), and is there presumed to have been protruded through it, where it is also stated, "whether they (the Iron sands) are of freshwater or of marine origin, has not been satisfactorily determined. The term "Iron sand" was also used by Buckland, Greenough, Conybeare, and Phillips; and it was "the sand and sandstone beneath the oak-tree clay" of Smith. Webster, in his 'Letters to Sir H. Englefield,' described them as "ferruginous sands," including under this name also the Weald clay and Lower green-sand, and considered the Purbeck beds as constituting the lowest strata of the Isle of Wight. Dr. Fitton, in 1824, clearly pointed out that the two sands were distinctly separated "by a stratum of clay precisely corresponding, both in situation and in the fossils which it contains, with the Weald clay of Kent and Sussex. It is the *inferior of these sands alone* which is the equivalent of the *Hastings beds*; and these constitute the lowest formation visible in the Isle of Wight" (Annals of Philosophy, 1824, vol. viii. p. 367); and further, that the organized productions of the Lower greensand (Shanklin sand) were all *marine*, but those of the Hastings sands, almost exclusively, of *freshwater origin* (*ibid.* p. 379). Nor should the observations and deductions of Sir C. Lyell at that time be overlooked, respecting the order of the strata below the Chalk (communicated to Dr. Mantell, July 1822), and which are frankly acknowledged by Dr. Fitton.

Amongst the additions to the Secondary rocks, the notice of the extension of the bone-bed is an interesting feature. Some other points in the oolitic strata require further investigation, more especially as regards the nature, character, and equivalents of the Lower Oolites in the central counties of England: there are good reasons for believing that the slates of Stonesfield and Collyweston alluded to (pp. 510, 516) are not synchronous; they have few organic remains in common, and the Collyweston slates appear to be low down in the Inferior Oolite, or at least underlie beds containing some of the characteristic fossils of that stratum in the west of England.

The Trias and Permian are retained, as before, in one chapter, but their geographical extension is more fully described, and the researches of Murchison, Ramsay, King, and Howse, on these deposits noticed. The lecture on the Carboniferous system, upon which the editor has expended much time, labour, and thought, will be read with considerable interest, as containing new and important matter, clearly put and concisely arranged, so as to afford a general view of the structure, conditions, nature, and probable mode of accumulation of this important portion of the geological series; the student being especially referred to numerous valuable papers treating of the nature

and structure of coal itself, and also to the inquiries respecting the physical geography of the old carboniferous area, as treated of by Murchison, Elie de Beaumont, and more recently by Mr. Godwin-Austen, the observations of the latter bearing more immediately on the geological structure of the ground beneath London, in relation to the probable occurrence of some portions of the upper palæozoic series at less depths than is generally supposed.

The eighth lecture, in two parts, treats of the Devonian, Silurian, and Cambrian strata, as well as the nature of volcanic action and metamorphism, &c. In this part are some useful tables illustrative of the successive changes in the organic kingdom, the chronological appearance of certain classes and orders of animals, and of the rocks composed wholly or partly of animal remains. Much new and interesting matter is introduced in this chapter, and the researches of Sir R. I. Murchison and his early coadjutor, Prof. Sedgwick, fairly and fully acknowledged. The second edition of 'Siluria' of the former author is looked for with much interest; even in these volumes the editor has been kindly allowed to use some of the important facts and corrected classifications contained in that forthcoming work.

In conclusion, this edition of the 'Wonders of Geology' may be recommended as a useful manual to the student and general reader. We could have wished that some of the lignographs (41, 42) had been replaced, and, further, that the *mantle* of the late author had not fallen so heavily on the present editor, in his not curtailing the too frequent complimentary expressions to scientific friends. Science should be revered for its own sake; it has a reward, and the truth-loving spirit alone should be the stimulus in our finite attempts to vestigate the past wonders of Creative Wisdom.

Flore de l' Ouest de la France. By J. Lloyd. 12mo. Nantes, 1854.

This book, of fully 770 pages, includes the plants of Bretagne and the coasts of the Bay of Biscay to the north of the Gironde. It has much interest to British botanists, owing to the great similarity of the Bretagne plants to those of our south-western counties. The author possesses much skill in detecting the distinctive points of plants, and has usually so marked them by typographical arrangements as to render their separation from the long descriptions tolerably easy.

This book is very valuable and well deserving of attention. Its author is better acquainted with the doings of the botanists of other countries than is usual with those of France.

Flore du Centre de la France et du Bassin de la Loire. Third Edition. By A. Boreau. 8vo. Paris, 1857.

The fact of this work having arrived at a third edition would have been a sufficient reason for considering it as deserving of attention, and an examination of its contents shows that it cannot be safely